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G08C

## (54) Display apparatus

(57) User-responsive marketing display apparatus has means whereby a quantitative assessment can be made of selectable factors in relation to the utilisation of the apparatus. The apparatus includes means (19) for enabling a user selectably to demand subject matter information to be displayed on a display (18); means (23) for establishing data relating to preselectable parameters (e.g. height, weight) associated with the user and means for requesting data from the user; and means (25) for collating the data for producing a profile of the user indicative of the relationship of the user to the selected subject matter.

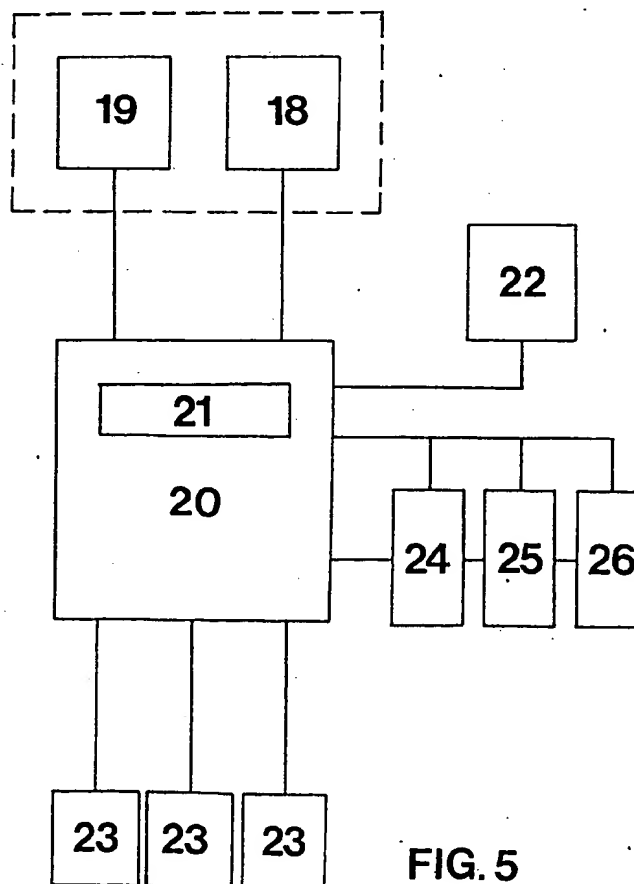
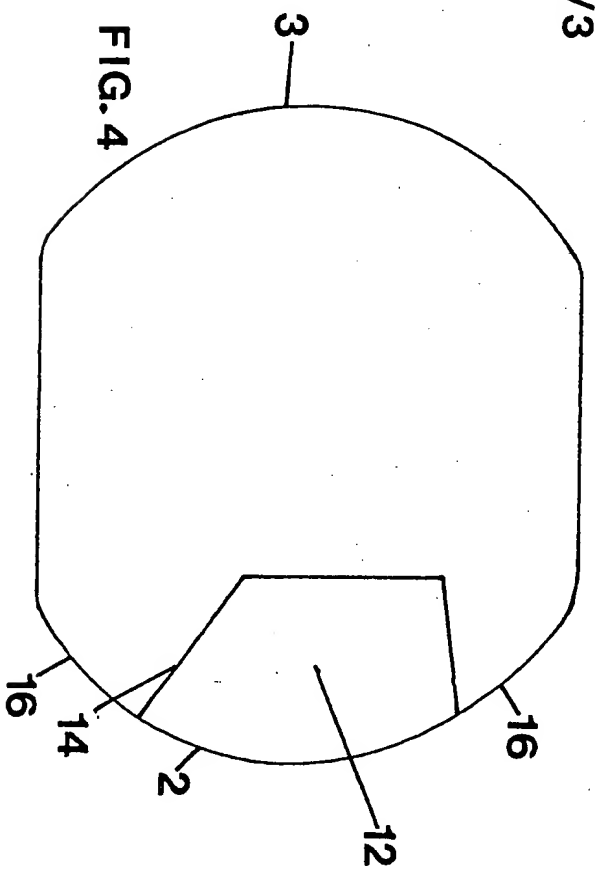
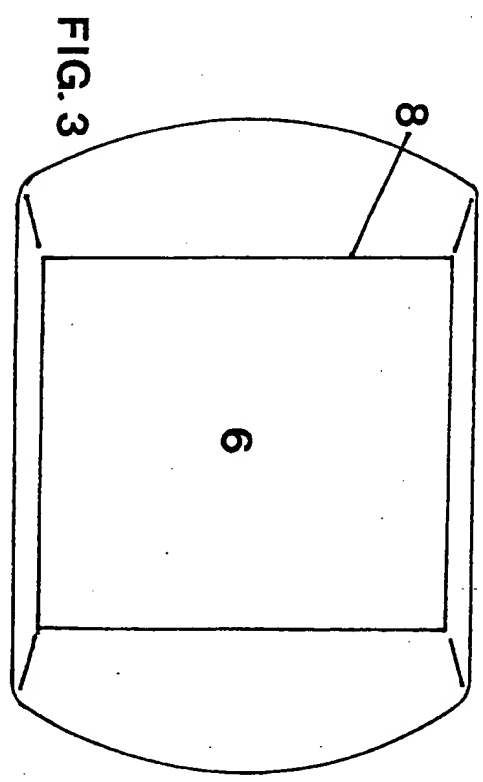
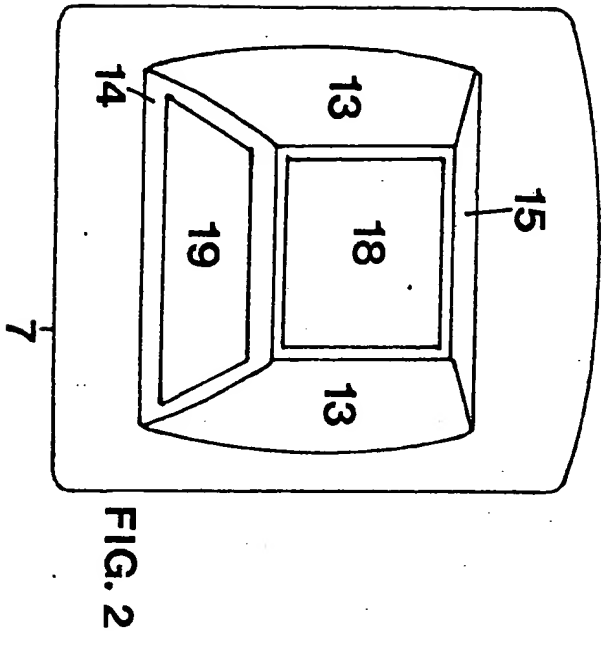
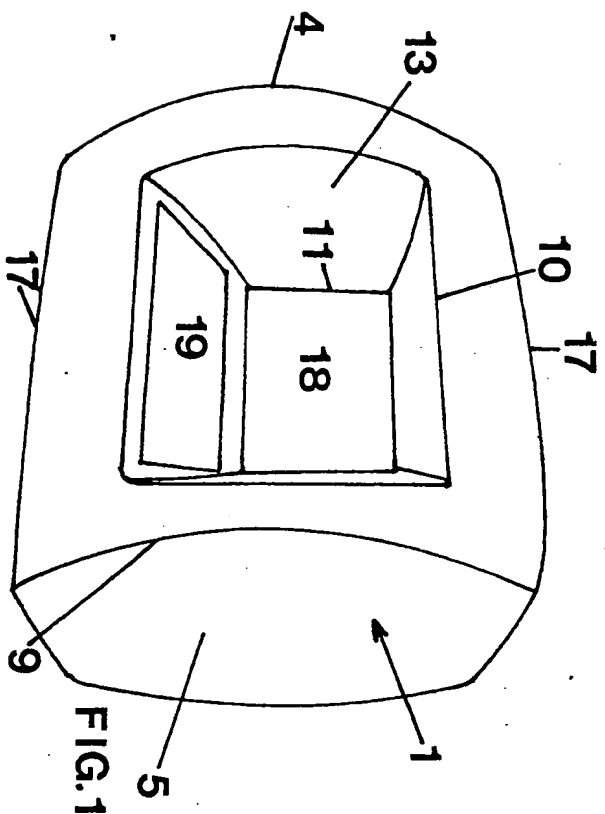


FIG. 5

The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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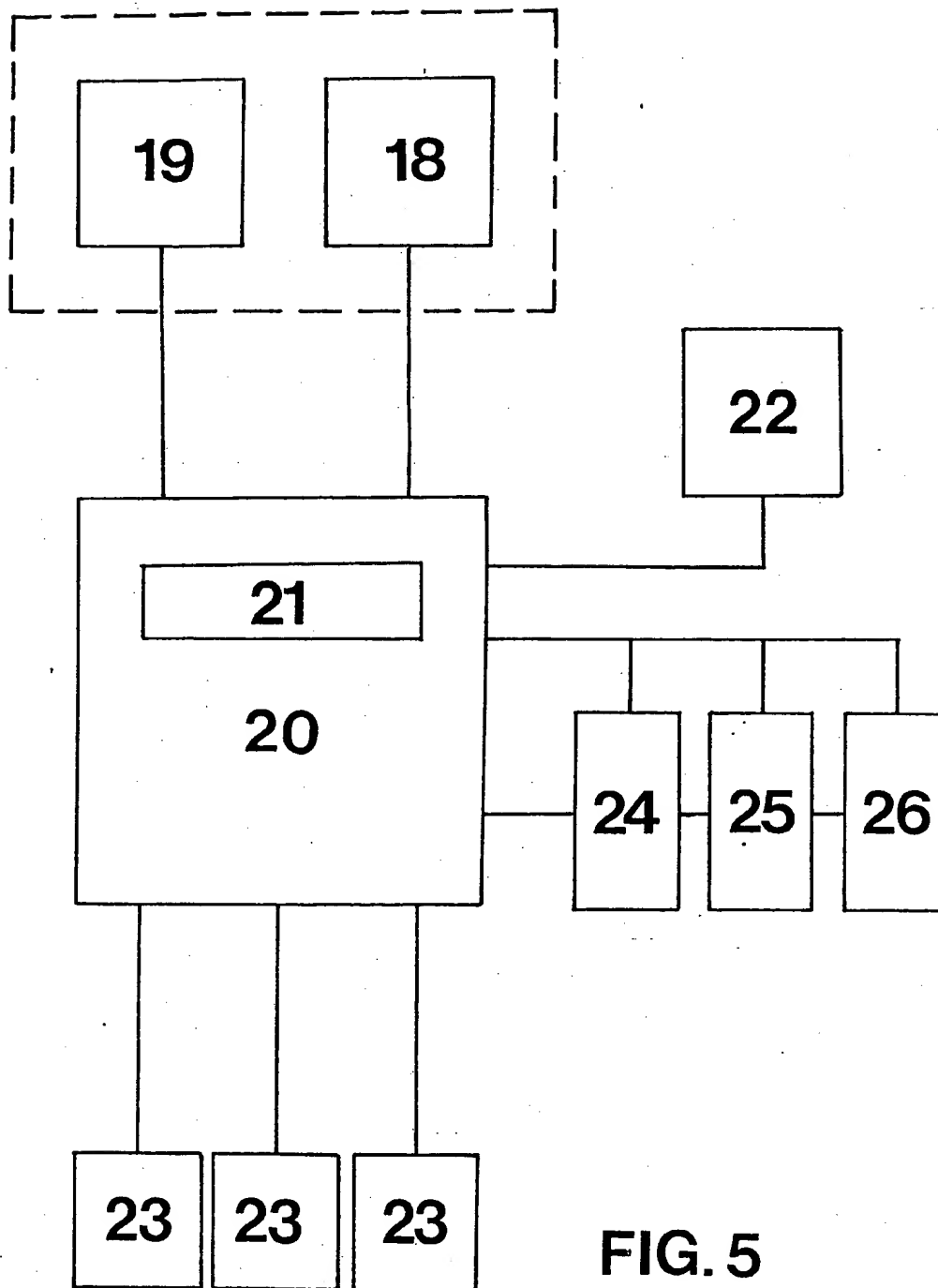
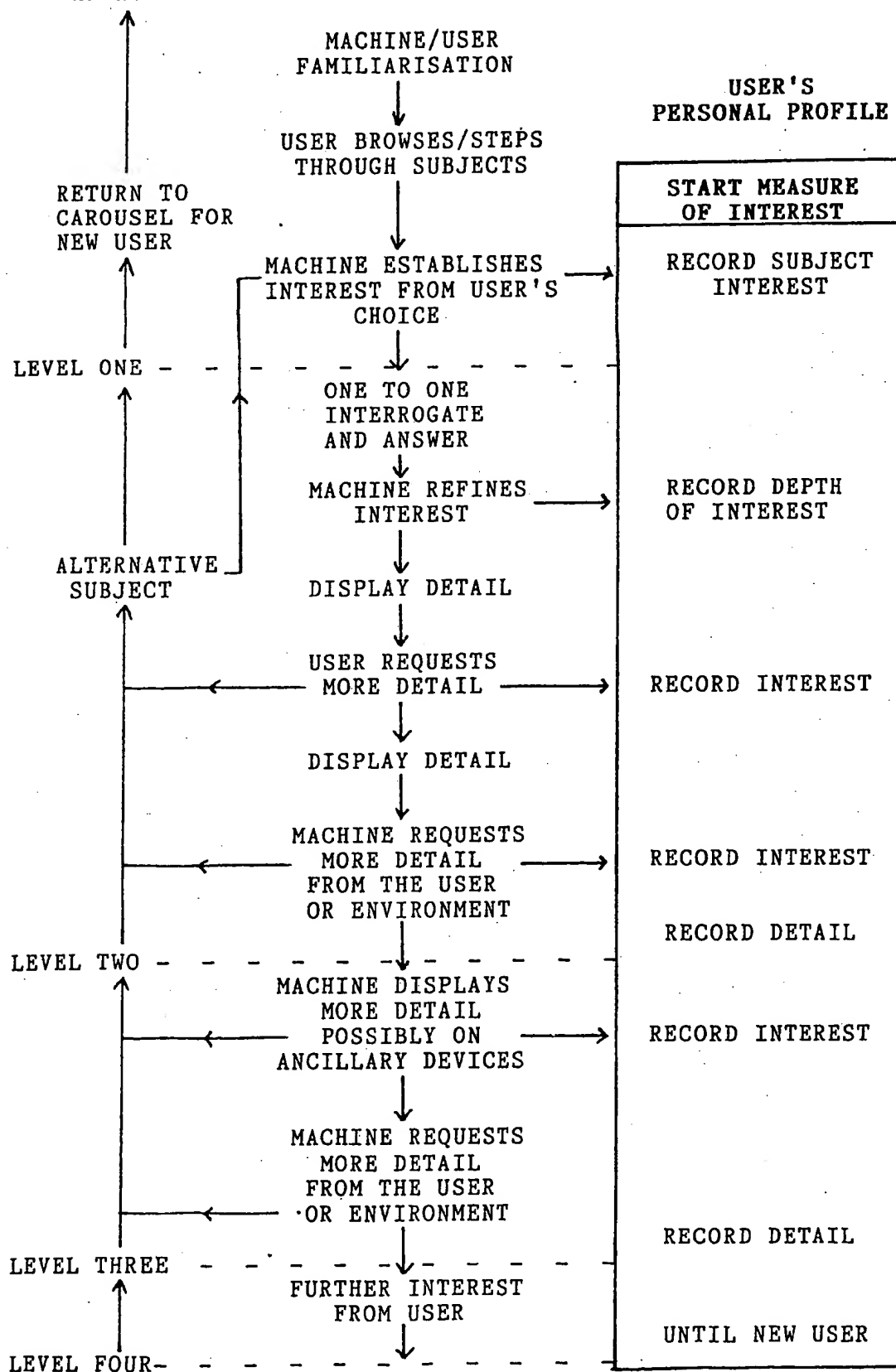


FIG. 5

## CAROUSEL -- SUBJECTS OF INTEREST

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## SPECIFICATION

### Display Apparatus

This invention relates to apparatus for facilitating marketing and more particularly to apparatus for providing a visual display or representation of information characteristic of products, services; and any other matters which are representable by visual display techniques.

It is well known to store or provide a bank of data which can be representative of alpha-numeric characters, pictures or other representations which can be retrieved and presented upon a visual display at a user's request, and changed at will by the customer operating a suitable keyboard or other manually operable arrangement.

It is also well known that one of the great imponderables in relation to marketing is that it is very difficult to deduce from any marketing activity information upon which to form a quantitative assessment as to the value of any particular marketing display.

In general, the on-going philosophy of development of new computer systems is to make them smaller, lighter and faster in operation than previously constructed systems. Computer systems in general have a requirement to store processed information or programs permanently. Present day commercial computers systems utilise disc systems for their normal storage operation interfacing with volatile memory to reduce costs and to increase the speed of processing. Alpha-numeric information input keyboards for the systems are of light-weight construction and their layout is designed for facilitating large volumes of data entry in formats recognised by computer operators, additional keys being provided to facilitate specialised control of the processor. The associated visual displays are in monochrome or in colour, the coloured displays being used for games, design techniques and training apart from videotext or interactive video.

Electro-mechanical systems are inherently unreliable for use in harsh environments. Disc technology with moving parts is not suitable. In addition, such systems are slow to create screens for display, writing visibly across the screen.

Hence a conventional data/information input terminal for a computer system is open to abuse by the elements, vandals etc., and does not offer a solution to display and capture of information in a simple manner for the benefit of people while they are on the move in a particular environment i.e., shopping arcade or the like.

The recording and/or logging of information is coded at source and does not require to accumulate by transmission via a telephone or other form of communication. An option does exist to transmit the concentrated coded data if security will allow either intramural or extramural transmission. The apparatus, therefore, can be free standing with options to be operated remotely.

Any subject matter page on the display system can be replaced or amended instantly. The apparatus in multi-display unit systems enables each display unit to be addressed separately. This

means an economic approach is utilised to access required parts of information. Updating the subject matter information can be effected at the keyboard, via disc, or data transmission executed remotely via telephone or radio transmission.

Broadly, according to a first aspect of the invention a marketing display apparatus incorporates means whereby a quantitative assessment can be made of selectable factors in relation to the utilisation of the apparatus.

In accordance with a second aspect of the invention the display apparatus incorporates means for producing a record of the extent of usage of any of the items of data that have been utilised in the system.

In accordance with a still further aspect of the invention user responsive display apparatus incorporates means for enabling a user selectably to demand subject matter information to be displayed on a display;

means for establishing data relating to preselectable parameters associated with the user and/or the environment of the display apparatus; and;

means for collating said data so as to produce a profile indicative of the relationship of the user to the subject matter information and like data selected to be displayed.

Conveniently, information relating to any particular subject matter is arranged to be presentable to the user in a stage by stage manner following response by the user to a predetermined sequence of information seeking queries by a data management system in such manner that the management system is able to gather information relating to said parameters in return for enabling the user to be presented with a succession of desired subject matter displays.

Conveniently, means are provided for establishing an indication of the number of times a user or users of the apparatus has or have caused any subject matter display or displays to be presented upon the visual display of the apparatus.

Preferably, the arrangements for providing a quantitative assessment of the utilisation of the apparatus include means for measuring any time period or periods during which data items have been presented for viewing after a subject matter demand has been executed by the user.

In addition, sensor arrangements can be provided for detecting predefined parameters associated with users or possible users of the apparatus and/or of the environment of the apparatus.

The apparatus of the invention can be adapted for mounting at a convenient location in a marketing environment such that manually operable control means is accessible to a user at an ergonomically satisfactory level such that it is not readily accessible to essentially non-interested persons such as children.

For a better understanding of the invention and to show how to carry the same into effect reference will be now be made to the accompanying drawings in which:-

Figure 1 is a perspective view of a housing or

enclosure for the apparatus of the invention;

Figure 2 is a front view of the apparatus of Figure 1,

Figure 3 is a rear view of the apparatus of Figures 1 and 2;

Figure 4 is a schematic view from the side illustrating the inter-relationships between parts of the housing or enclosure of the previous Figures.

Figure 5 is a schematic block diagram of the general operational architecture of the arrangements of the invention; and

Figure 6 is an alpha-numerically annotated flow diagram illustrating in general terms the stages and sequence of operation of the arrangements of the invention.

Referring now to the drawings a housing or enclosure 1 has a front face 2, a rear wall 3, side walls 4 and 5, a top 6 and a bottom 7. As can be seen from Figures 3 and 4 the rear wall 3 has generally rectangular outer periphery 8 and is convex outwards in that it is part cylindrical. The front face 2 has a generally rectangular outer periphery 9 and as seen from the side is convex outwards and thus part cylindrically shaped. A rectangular cut-out 10 is formed in the front face, this cut-out being symmetrically arranged with respect to the front face.

A central inner frame part 11 defining the position of a visual display screen is positionally located with respect to the front face 2 by a tapering tunnel like structure 12 including side walls 13, a bottom wall 14 and a top wall 15. As can be seen from the Figure the interpenetration of the box-like structure 12 with the front face 2 provides outwardly belled side edge regions 16 and rectilinear top and bottom edge regions 17. Arrangements, not shown, are provided for mounting a visual display screen 18 so that it is operationally positioned within the framing.

The top wall tapers rearwardly and downwardly, whilst the bottom wall 14 is inclined upwardly at an angle of 35 degrees so as to provide an inclined support means for mounting an alpha-numeric keyboard, keypad, touch responsive member or the like 19 having user operatable keys or operation location areas or the like.

The relationship between the tapered housing insert tunnel like structure 12 and the location of the video display screen 18 is such as to provide for a tunnelling or channelling vision effect which serves to guide and effectively concentrate the user's eye and thus the interest of the user towards the display screen. The tunnel like structure 12 likewise assists in the audio characteristics of the apparatus. The keyboard or the like 19 is presented at an angle which complements the tunnelling effect produced by the tapered front face section. This arrangement also contributes to the elimination of extraneous light which could degrade the image quality of the video display. This feature can be of particular importance when the apparatus is installed in a public place such as a shopping precinct. Thus the apparatus can be wall mounted or free-standing.

It will be seen that the housing has been styled with curves and soft lines to reduce water or dust traps and to be aesthetically pleasant. The

projections of the housing together with the part belled and cylindrical shape ensures a suitable system to radiate signals in the form of light or other directional electronic transmission. In this regard the shape forms a high resolution matrix by triangulation to measure via sensors (not shown) the approach of a person to the unit.

In addition, other sensors (not shown) can serve to record parameters of the user such as height, weight and build whereby it is possible to determine the probable age and sex of the user together with the recording of subjects of interest as outlined previously. Other factors, for example, speed of key depressions can be detected and recorded thereby to add to the detail of user information statistics being made available to produce a profile of the user in relation to his utilisation of the apparatus. It will be appreciated that the technique of using sensors such as mentioned allows the unit to sense also any desirable or undesirable activity and hence could be arranged to activate alarm or other security devices.

The above mentioned tunnel effect and the keyboard area allows a focusing of attention for people of varying height and allows for comfort of use when standing (or even sitting). The keyboard 19 is designed in a way that, without having to remove their gaze completely from the screen area, a key can be found quickly.

The vertical screen format allows display by cycling screens of colour graphics when not in use by an enquirer.

The keyboard shelf has been styled to repel liquid flow and the angle specified has been found to make it difficult for solids to be retained in the area. The angle also allows display of the letters without having to look over the top of the keys.

The housing is formed from highly polished glass fibre thereby to give appeal and to reduce maintenance thus making it difficult for felt tips and paint spray marks to be retained. The housing is lined with wood to reduce humidity and steel mesh in the glass fibre ensures strength and security. The display incorporates double screens of polycarbonated and other materials thereby reducing risk of vandels damaging the display.

The general philosophy of the keypad/keyboard 19 of the above discussed apparatus is to provide for a tactile approach even though transmission of the depression may be not physically through a surface such as glass or GRP.

A tactile approach has been found in at least marketing terms to be more appealing and assists in certain applications e.g., the blind with recorded tape facilities, or disabled people in other applications. This means that a low cost external surface technology reliable in operation to elements (rain/dust) and which can be easily replaced to combat pranksters or vandals is required. The design as shown of the keyboard area is particularly suitable for either windows or a sloped surface.

The housing design serves to project sound effects associated with the apparatus to the user in areas of excessive noise, for example, from traffic whilst assisting at the same time to reduce the

sound to people not using the unit by its reflection within the tunnel.

The flat sides of the housing facilitate the stacking of units one against the other in multiple screen formats and also provide a means to apply posters

logos and instructions to attract the general public. The electronic unit of the apparatus incorporates a computer management/control system having a storage facility which can be addressed by the pressing of dedicated keys of the keyboard to cause the presentation of the selected information upon the display screen. The management system incorporates a real time clocking arrangement whereby the actual time and duration of the display of any data item upon the display can be determined. In addition, arrangements are provided for providing a count of the number of times any particular item or items have been presented upon the display.

Since an important aspect of the apparatus of the invention is the design philosophy of the system which calls for the fastest response to a user's request for information while in a public environment. Importantly recording his choice and pattern of thought in detail against time and environmental conditions. It also allows him to communicate back to the machine for more detail or even to order a product or service. Specialised frames assist in market research and opinion polls.

The apparatus incorporates a management/control system 20 for the control of the transfer of data to and from a main store 21 for the subject matter to be presented on the display 18 and for controlling the ongoing instantaneous presentation of subject matter information on the display 18 which subject information is arranged to undergo a continuous cycling process in the manner of a carousel. As has been mentioned the display 18 is provided with a user direct access keyboard keypad, touchpad or other suitable means 19 whereby a user can selectively step through the content of the data store subject content, i.e., browse the content of the store 21 thereby to select any particular subject of interest. Upon a user effecting a browsing i.e., the initial subject matter selection operation the management system 20 is arranged during the first stage of a browse to provide on the display 18 a first level of subject matter information, and at the same time initiate investigation and recordal of a number of selected parameters relative to the browsing operation such as the fact that the apparatus has been used, to identify and to record the nature of the subject matter selected, and to, for example, measure the time and place of the selections made by the user during an initial browsing stage. In addition, the monitoring of any additional sensors will be effected and the results recorded. For these purposes the management system 20 will include a real time clock arrangement 22 and will have connected therewith sensors 23 intended to detect dedicated parameters of the user and the environment.

In the event that the user fails to continue with a browsing operation after commencement of an initial browse operation the management system,

after a predetermined time lapse returns the apparatus to its initial quiescent condition, i.e, the user attracting cycling condition.

The above sequence of events is conveniently regarded as a level one stage in the operational procedures. In practice, the level one i.e. initial display is intended to establish that the browser is interested in the selected subject matter as being subject matter of possible interest and offers a choice of possible particular areas of data available within the subject matter area selected.

If the user wishes to look deeper into the subject matter requested at the first level the presentation produced upon the display by the management system 20 will not only present the aforesaid first level subject matter but will also display additional data designed to interrogate the user with a view to establishing the profile of the user in relation to the depth of interest demonstrated by the user in the requested subject matter. This data can be conveniently be regards as being stored in a profile data establishing store 24. This stage of the procedure can be regarded generally as a level two.

The presentation of the particular areas of the display is controlled by the management system in such manner that in order for the user to gain access to a particular area the user has to respond to queries raised by the managerial system thereby to establish at least a part of said data relating to the preselectable parameters.

The management system is such that each time a user positively responds to an interrogation query an establishing data record is produced together with all of the other factors as above mentioned i.e., the time related factors to be collated into the profile and are entered into the store 24.

This user demand and management system display/interrogate procedure is continued until the user attains the desired depth of subject matter presentation. That is the subject matter area has been defined to a degree of fineness of detail satisfactory to the user, or to the maximum extent achievable for the main data store content.

If, at any stage in the procedure there is no further response from the user, the management system after a predetermined time period returns the apparatus to the quiescent condition in which the display cycles indications of subject matter availability on the display 18.

It will thus be apparent that provided the user continuously responds to the queries produced by the management system more and more subject matter information will be presented to the user in a succession of discrete stages, in which transfer from any one stage to the next stage can only be achieved by user response to management system interrogation. In other words the user is effectively rewarded by being enabled to access more and more detail in return for providing responses to the management system queries.

It will be appreciated that at each and every stage the user responses are time monitored so that the collation of the information relating to a user profile is progressively advanced as the user browses deeper and deeper into a selected subjected matter.

This part of the system is schematically indicated by the collator unit 25, which latter is intended to collate information, under control of the management system 20, involved in the data fed into the data store 22 as a result of the actions of the user and the operation of the various sensors 23. The output from the collator unit is presented as the required profile, schematically represented by the block 26. The profile can be in what ever form thought desirable, i.e., a print-out in a predetermined format.

It is convenient to note that at convenient points in the browse procedure the management system 20 may ask the user specific personal questions such as a request to identify the sex, age etc., that is questions serving to identify the user. In addition, the environmental data monitored by the various sensors 23 can as mentioned involve topics such as time, ambient factors such as temperature, and security and alarm parameters.

In other words, the management system initiates, establishes and maintains a one-to-one bi-directional information transfer relationship between the user and the extend of detail of subject matter presented to the user. Since the detail provided is related to the user response to specific requests for information considered to be necessary for collation to be able to establish a satisfactory profile of the user. This profile is intended to lead the establishment of information which facilitates subsequent formation of judgements about the possible practical utilisation of the subject matter information provided., i.e., a sale of an article if selling of the article is a reason for the inclusion of information of the article into the data store or whether or not the user is likely to respond to the subject matter data being provided.

The Figure 6 is a flow diagram illustrating a series of procedural steps through which a user is guided by the management system in order to establish the user profile whilst satisfying user demand for subject matter detail.

Thus the apparatus of the invention can be regarded as a message concentrator by way of additional terminals, an ideas box, an opinion former or recorder and which can be easily identified through its characteristic shape in a similar manner to a telephone box or post box. Its function is also to measure the flow of people through a location as well encouraging them to participate in interactive situations without embarrassment. It also has a security function by repelling people as well as attracting them. It is designed specifically to operate without cable connection but optionally can include normal services.

In other words, the apparatus of the invention provides a means whereby the effect and/or demand for information about any particular articles, products, services or the like can be assessed thereby providing an indication of the possible customer interest in particular products or services the details of which are available from the apparatus.

This means, in practice, that the providers of the

subject matter information can be provided with statistics relating to usage of the their information together with the user profile, which can enable the providers to form quantitative judgements of the way in which the would be customer has reacted to the information provided by the apparatus of the invention.

A further feature of the apparatus is that a user can input into the apparatus personal details so that the providers of information are able to obtain a direct contact possibility with the user of the apparatus.

Whilst the above has discussed the use of a single video display it will be understood that multiple displays could be utilised with multiplexing arrangements so that the utilisation of any unit could be compared and related to usage of other units.

In practice, the contents of the memory unit can be accessed, updated or retained by operations that do not require an external power source i.e., 250 Volts. This also means that every screen stored can be displayed in less than a second (i.e., any of, say, 8,000 pages/pictures). Since the cost of the memory to meet the above is high in comparison to normal memories the units have to be of modular construction so as to be able to meet all applications and have to have a high specification to meet temperature and humidity differentials. Electronic circuitry to ensure security is incorporated.

This now leads the apparatus of the invention unit to be different in electronic architecture. Where the memory becomes the principle or nucleus of the system and not a shared memory peripheral i.e., its value being intended to hold specialised data at all times. Unlike solid discs its data format is quite unique with its own operating system. Its two way traffic of display material and returned response and environmental capture status becomes a highly secure form of marketing detail.

Because of the format of the apparatus of the invention, screen data now can be either text, video-text, graphics or even a full colour video frame of a quality superior to TV broadcast. Each of these screens can be displayed or modified and measured at far greater speeds because the technique of using several processors on the same memory nucleus is now possible.

Because each module of the memory unit is a standalone non-volatile unit its versatility by suitable programs allows a cartridge system of data removal or change without electro-mechanical technology. Again a security to ensure data protection and its encryption.

The process of capturing data also uses sensors, transducers or keyboards and the importance of the housing of the apparatus of the invention is to contain a variety of sensors whereby determination of peoples movement or reactions in relation to the immediate environment without the housing being visible or vulnerable.

Since an important aspect of the apparatus of the invention is the design philosophy of the system which calls for the fastest response to a user's request for information while in a public

environment. Importantly recording his choice and pattern of thought in detail against time and environmental conditions. It also allows him to communicate back to the machine for more detail or even to order a product or service. Specialised frames assist in market research and opinion polls.

#### CLAIMS

1. User responsive marketing display apparatus incorporating means whereby a quantitative assessment can be made of selectable factors in relation to the utilisation of the apparatus.
2. User responsive marketing display apparatus as claimed in claim 1, and incorporating means for producing a record of the extent of usage of any of the items of data that have been utilised in the system.
3. User responsive marketing display apparatus incorporating:
  - means for enabling a user selectably to demand information to be displayed on a display;
  - means for establishing data relating to preselectable parameters associated with the user; and
  - means for collating said data so as to produce a profile indicative of the relationship of the user to the subject matter information and like data selected to be displayed.
4. User responsive marketing display apparatus as claimed in claim 3, and wherein the establishing means is arranged to enable the user to browse through subject information stored in a main storage arrangement having a quiescent condition in which general subject information is arranged to be cyclically presented to a user information display unit.
5. User responsive marketing display apparatus as claimed in claim 3 or 4, wherein information relating to any particular subject matter is arranged to be presentable to the user in a stage by stage manner in response by the user to a predetermined

sequence of information seeking queries by a data management system in such manner that the management system is able to gather information relating to said parameters in return for enabling the user to be presented with a succession of desired subject matter displays.

6. User responsive marketing display apparatus as claimed in claim 5, and wherein the establishing means incorporates means for controlling the user search process in dependence upon response by the user to the receipt of information demands produced by the management system, and wherein said user responses provide at least a source of the information required for establishing data relative to said profile forming parameters.

7. User responsive marketing display apparatus as claimed in any preceding claim, wherein means are provided for establishing an indication of the number of times a user or users of the apparatus has or have caused any subject matter display or displays to be presented upon the visual display of the apparatus.

8. User responsive marketing display apparatus as claimed in any preceding claim, wherein the arrangements for providing a quantitative assessment of the utilisation of the apparatus include means for measuring any time period or periods during which data items have been presented for viewing after a subject matter demand has been executed by the user.

9. User responsive marketing display apparatus as claimed in any preceding claim, wherein sensor arrangements are provided for detecting predefined parameters associated with users or possible users of the apparatus and/or of the environment of the apparatus.

10. User responsive marketing display apparatus constructed and arranged to operate substantially as hereinbefore described with reference to the accompanying drawings.